

IN THE CLAIMS:

A complete listing of the claims is set forth below:

1. **(Previously Presented)** A method for generating an optimized supplier allocation plan, comprising:

identifying a plurality of parts associated with an allocation problem, the allocation problem having a demand requirement associated with the plurality of parts;

identifying a plurality of suppliers, each supplier operable to supply at least one part associated with the allocation problem;

selecting one or more objective functions, each objective function having a plurality of part variables, each part variable representing a quantity of a part to be procured from a supplier;

receiving at least one constraint constraining at least one part variable;

optimizing the one or more objective functions with respect to the at least one constraint to yield a value for each part variable by:

optimizing a first objective function to determine a first normalization factor;

optimizing a second objective function to determine a second normalization factor;

generating a combined objective function using the first objective function normalized by the first normalization factor and weighted by a first weighting factor and using the second objective function normalized by the second normalization factor and weighted by a second weighting factor; and

optimizing the combined objective function; and

determining a quantity of each part to be procured from at least one supplier according to the values to generate the optimized supplier allocation plan.

2. **(Original)** The method of Claim 1, wherein:
each part variable represents a quantity of a part to be procured from a supplier for a site; and

determining a quantity of each part comprises determining a quantity of each part to be procured from at least one supplier for a site according to the values.

3. **(Original)** The method of Claim 1, wherein:
each part variable represents a quantity of a part to be procured from a supplier at a time period; and

determining a quantity of each part comprises determining a quantity of each part to be procured from at least one supplier at a time period according to the values.

4. **(Original)** The method of Claim 1, further comprising:
generating an object model operable to visually represent the allocation problem on a computer display; and

generating a mathematical model from the object model, the mathematical model comprising the one or more objective functions.

5. **(Canceled)**

6. **(Canceled)**

7. **(Original)** The method of Claim 1, wherein optimizing the one or more objective functions comprises minimizing a total cost.

8. **(Previously Presented)** A system for generating an optimized supplier allocation plan, comprising:

a database operable to store:

a list of a plurality of parts associated with an allocation problem, the allocation problem having a demand requirement associated with the plurality of parts; and

a list of a plurality of suppliers, each supplier operable to supply at least one part associated with the allocation problem; and

a server system coupled to the database and operable to:

select one or more objective functions, each objective function having a plurality of part variables, each part variable representing a quantity of a part to be procured from a supplier;

receive at least one constraint constraining at least one part variable;

optimize the one or more objective functions with respect to the at least one constraint to yield a value for each part variable by:

optimizing a first objective function to determine a first normalization factor;

optimizing a second objective function to determine a second normalization factor;

generating a combined objective function using the first objective function normalized by the first normalization factor and weighted by a first weighting factor and using the second objective function normalized by the second normalization factor and weighted by a second weighting factor; and

optimizing the combined objective function; and

determine a quantity of each part to be procured from at least one supplier according to the values to generate the optimized supplier allocation plan.

9. **(Original)** The system of Claim 8, wherein:
each part variable represents a quantity of a part to be procured from a supplier for a site; and

the server system is operable to determine a quantity of each part by determining a quantity of each part to be procured from at least one supplier for a site according to the values.

10. **(Original)** The system of Claim 8, wherein:
each part variable represents a quantity of a part to be procured from a supplier at a time period; and

the server system is operable to determine a quantity of each part by determining a quantity of each part to be procured from at least one supplier at a time period according to the values.

11. **(Original)** The system of Claim 8, wherein the server system comprises:
an object model module coupled to the database and operable to generate an object model operable to visually represent the allocation problem on a computer display; and

a mathematical model module coupled to the object model module and operable to generate a mathematical model from the object model, the mathematical model comprising the one or more objective functions.

12. **(Canceled)**

13. **(Canceled)**

14. **(Original)** The system of Claim 8, wherein the server system is operable to optimize the one or more objective functions by minimizing a total cost.

15. **(Previously Presented)** Software for generating an optimized supplier allocation plan, the software embodied in computer-readable media and when executed operable to:

- identify a plurality of parts associated with an allocation problem, the allocation problem having a demand requirement associated with the plurality of parts;

- identify a plurality of suppliers, each supplier operable to supply at least one part associated with the allocation problem;

- select one or more objective functions, each objective function having a plurality of part variables, each part variable representing a quantity of a part to be procured from a supplier;

- receive at least one constraint constraining at least one part variable;

- optimize the one or more objective functions with respect to the at least one constraint to yield a value for each part variable by:

 - optimizing a first objective function to determine a first normalization factor;

 - optimizing a second objective function to determine a second normalization factor;

 - generating a combined objective function using the first objective function normalized by the first normalization factor and weighted by a first weighting factor and using the second objective function normalized by the second normalization factor and weighted by a second weighting factor; and

 - optimizing the combined objective function; and

- determine a quantity of each part to be procured from at least one supplier according to the values to generate the optimized supplier allocation plan.

16. **(Original)** The software of Claim 15, wherein:
each part variable represents a quantity of a part to be procured from a supplier for a site; and

the software is operable to determine a quantity of each part by determining a quantity of each part to be procured from at least one supplier for a site according to the values.

17. **(Original)** The software of Claim 15, wherein:
each part variable represents a quantity of a part to be procured from a supplier at a time period; and

the software is operable to determine a quantity of each part by determining a quantity of each part to be procured from at least one supplier at a time period according to the values.

18. **(Original)** The software of Claim 15, operable to:
generate an object model operable to visually represent the allocation problem on a computer display; and
generate a mathematical model from the object model, the mathematical 5 model comprising the one or more objective functions.

19. **(Canceled)**

20. **(Canceled)**

21. **(Original)** The software of Claim 15, operable to optimize the one or more objective functions by minimizing a total cost.

22. **(Previously Presented)** A system for generating an optimized supplier allocation plan, comprising:

means for identifying a plurality of parts associated with an allocation problem, the allocation problem having a demand requirement associated with the plurality of parts;

means for identifying a plurality of suppliers, each supplier operable to supply at least one part associated with the allocation problem;

means for selecting one or more objective functions, each objective function having a plurality of part variables, each part variable representing a quantity of a part to be procured from a supplier;

means for receiving at least one constraint constraining at least one part variable;

means for optimizing the one or more objective functions with respect to the at least one constraint to yield a value for each part variable by:

means for optimizing a first objective function to determine a first normalization factor;

means for optimizing a second objective function to determine a second normalization factor;

means for generating a combined objective function using the first objective function normalized by the first normalization factor and weighted by a first weighting factor and using the second objective function normalized by the second normalization factor and weighted by a second weighting factor; and

means for optimizing the combined objective function; and

means for determining a quantity of each part to be procured from at least one supplier according to the values to generate the optimized supplier allocation plan.

23. **(Previously Presented)** A method for generating an optimized supplier allocation plan, comprising:

identifying a plurality of parts associated with an allocation problem, the allocation problem having a demand requirement associated with the plurality of parts;

identifying a plurality of suppliers of the allocation problem, each supplier operable to supply at least one part associated with the allocation problem;

generating an object model operable to visually represent the allocation problem on a computer display;

generating a mathematical model from the object model, the mathematical model comprising a plurality of objective functions, each objective function having a plurality of part variables, each part variable representing a quantity of a part to be procured from a supplier for a site at a time period;

receiving at least one constraint constraining at least one part variable;

optimizing the objective functions with respect to the at least one constraint to yield a value for each part variable by:

optimizing a first objective function to determine a first normalization factor;

optimizing a second objective function to determine a second normalization factor;

generating a combined objective function using the first objective function normalized by the first normalization factor and weighted by a first weighting factor and using the second objective function normalized by the second normalization factor and weighted by a second weighting factor; and

optimizing the combined objective function; and

determining a quantity of each part to be procured from at least one supplier for a site at a time period according to the values to generate the optimized supplier allocation plan.